ZXTN2010Z

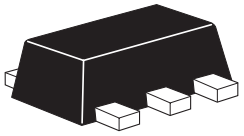
60V NPN LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

SUMMARY

BV_{CEO} = 60V : R_{SAT} = 30mΩ; I_C = 5A

DESCRIPTION

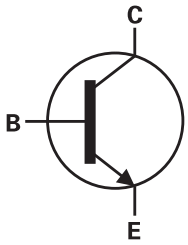
Packaged in the SOT89 outline this new low saturation 60V NPN transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



SOT89

FEATURES

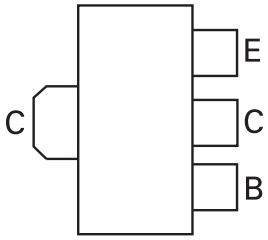
- Extremely low equivalent on-resistance; **R_{SAT} = 30mV at 6A**
- 5 amps continuous current
- Up to 20 amps peak current
- Very low saturation voltages
- Excellent h_{FE} characteristics up to 10 amps



APPLICATIONS

- Emergency lighting circuits
- Motor driving (including DC fans)
- Solenoid, relay and actuator drivers
- DC-DC modules
- Backlight inverters
- Power switches
- MOSFET gate drivers

PINOUT



TOP VIEW

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXTN2010ZTA	7”	12mm embossed	1,000 units

DEVICE MARKING

851

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	BV_{CBO}	150	V
Collector-emitter voltage	BV_{CEO}	60	V
Emitter-base voltage	BV_{EBO}	7	V
Continuous collector current [a]	I_C	5	A
Peak pulse current	I_{CM}	20	A
Power dissipation at T_A =25°C [a]	P_D	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at T_A =25°C [b]	P_D	2.1	W
Linear derating factor		16.8	mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE

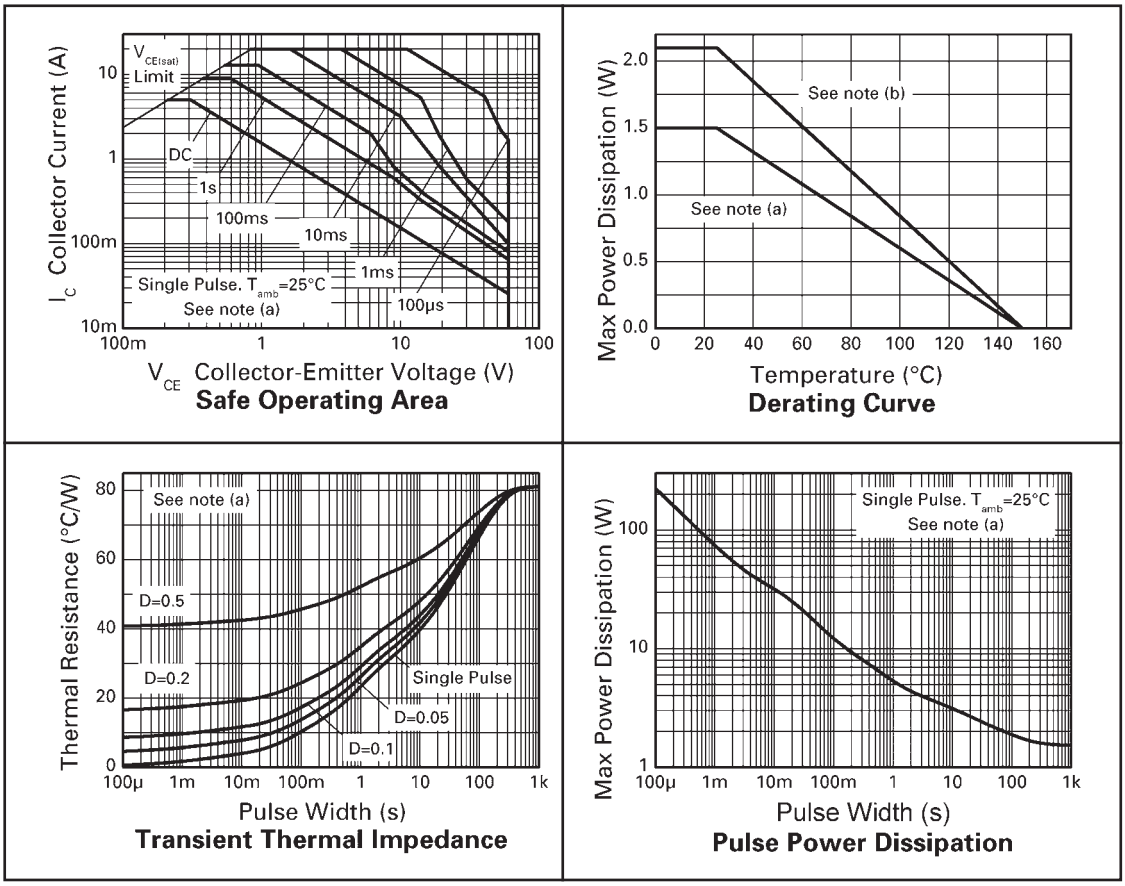
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient [a]	$R_{\Theta JA}$	83	°C/W
Junction to ambient [b]	$R_{\Theta JA}$	60	°C/W

NOTES

(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

CHARACTERISTICS



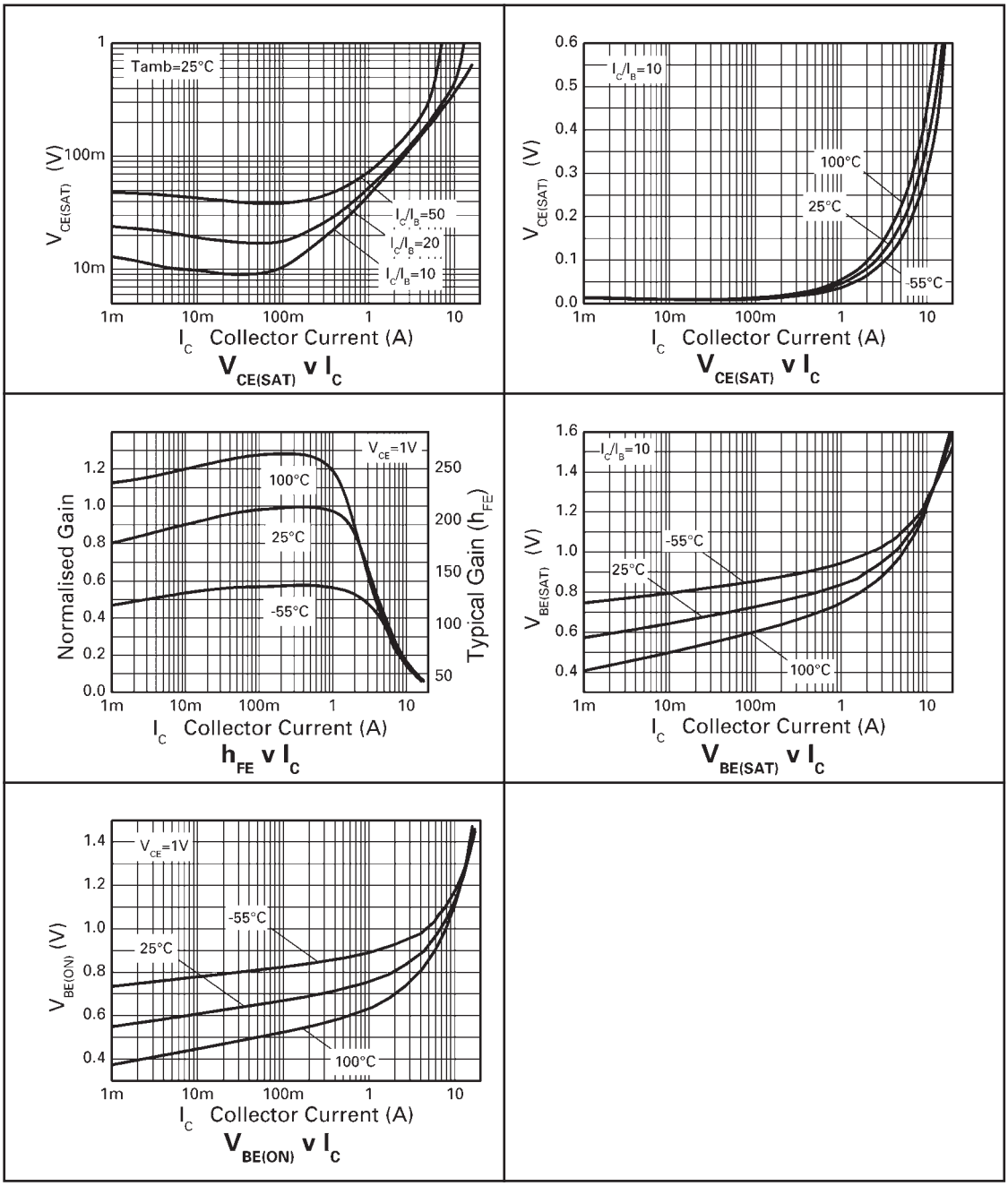
ZXTN2010Z

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	BV_{CBO}	150	190		V	I_C=100μA
Collector-emitter breakdown voltage	BV_{CER}	150	190		V	I_C=1μA, RB≤1kΩ
Collector-emitter breakdown voltage	BV_{CEO}	60	80		V	I_C=10mA*
Emitter-base breakdown voltage	BV_{EBO}	7	8.1		V	I_E=100μA
Collector cut-off current	I_{CBO}			20	nA	V_{CB}=120V
				0.5	μA	V_{CB}=120V,T_{amb}=100°C
Collector cut-off current	I_{CER}			20	nA	V_{CB}=120V
	R ≤ 1kΩ			0.5	μA	V_{CB}=120V,T_{amb}=100°C
Emitter cut-off current	I_{EBO}			10	nA	V_{EB}=6V
Collector-emitter saturation voltage	$V_{CE(SAT)}$		17	30	mV	I_C=100mA, I_B=5mA*
			35	55	mV	I_C=1A, I_B=100mA*
			40	65	mV	I_C=1A, I_B=50mA*
			90	125	mV	I_C=2A, I_B=50mA*
			170	230	mV	I_C=6A, I_B=300mA*
Base-emitter saturation voltage	$V_{BE(SAT)}$		970	1100	mV	I_C=6A, I_B=300mA*
Base-emitter turn-on voltage	$V_{BE(ON)}$		910	1050	mV	I_C=6A, V_{CE}=1V*
Static forward current transfer ratio	H_{FE}	100	200			I_C=10mA, V_{CE}=1V*
		100	200	300		I_C=2A, V_{CE}=1V*
		55	105			I_C=5A, V_{CE}=1V*
		20	40			I_C=10A, V_{CE}=1V*
Transition frequency	f_T		130			I_C=100mA, V_{CE}=10V
						f=50MHz
Output capacitance	C_{OBO}		31		pF	V_{CB}=10V, f=1MHz*
Switching times	t_{ON}		42		ns	I_C=1A, V_{CC}=10V,
	t_{OFF}		760			I_{B1}=I_{B2}=100mA

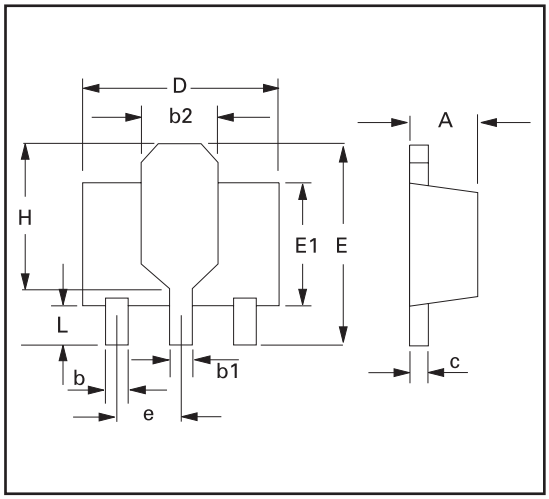
* Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤2%.

TYPICAL CHARACTERISTICS

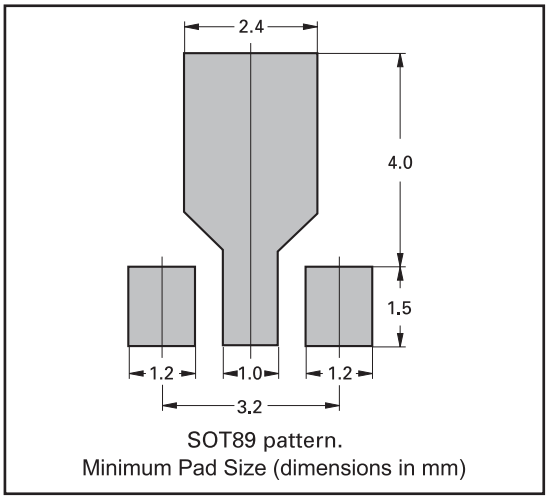


ZXTN2010Z

PACKAGE OUTLINE



PAD LAYOUT DETAILS



SOT89 pattern.
Minimum Pad Size (dimensions in mm)

Controlling dimensions are in millimeters. Approximate conversions are given in inches

PACKAGE DIMENSIONS

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	1.40	1.60	0.550	0.630	e	1.40	1.50	0.055	0.059
b	0.38	0.48	0.015	0.019	E	3.75	4.25	0.150	0.167
b1	-	0.53	-	0.021	E1	-	2.60	-	0.102
b2	1.50	1.80	0.060	0.071	G	2.90	3.00	0.114	0.118
c	0.28	0.44	0.011	0.017	H	2.60	2.85	0.102	0.112
D	4.40	4.60	0.173	0.181	-	-	-	-	-

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